

## Claims

1. A cleanser formulation comprising sulfur, a surfactant, and a lipophilic emulsifying agent, wherein the concentration of the emulsifying agent in the formulation is 7% w/w or higher.

5            2. The cleanser formulation of claim 1 wherein the formulation has decreased malodor compared with a similar second cleanser formulation having the same concentration of sulfur and surfactant but having a concentration of the emulsifying agent less than 7% when the cleansers are applied to skin.

10           3. The cleanser formulation of claim 1 wherein the lipophilic emulsifying agent is emulsifying wax.

            4. The cleanser formulation of claim 3 wherein the emulsifying wax is Emulsifying Wax N.F.

            5. The cleanser formulation of claim 1 wherein the concentration of emulsifying agent is between 8% and 20%.

15           6. The cleanser formulation of claim 1 wherein the concentration of emulsifying agent is between 10% and 15%.

7. The cleanser formulation of claim 1 wherein the concentration of emulsifying agent is about 15%.

8. The cleanser formulation of claim 1 wherein the concentration of emulsifying agent is over 15%.

5 9. The cleanser formulation of claim 1 wherein the surfactant is selected from the group consisting of nonionic, anionic, cationic, zwitterionic, amphoteric, and ampholytic surfactant.

10. The cleanser formulation of claim 1 wherein the surfactant is an ionic surfactant or a combination of ionic and non-ionic surfactants.

10 11. The cleanser formulation of claim 10 wherein the surfactant is one or more surfactants selected from the group consisting of sodium cocoyl isethionate, polypropylene glycol (PPG) -2-hydroxyethylcoco isostearamide, and a combination of disodium laureth sulfosuccinate and sodium lauryl sulfoacetate.

15 12. The cleanser formulation of claim 1 wherein the concentration of surfactant in the formulation is about 5 to about 50%.

13. The cleanser formulation of claim 12 wherein the concentration of surfactant in the formulation is 10 to 35%.

14. The cleanser formulation of claim 13 wherein the concentration of surfactant in the formulation is 15 to 25%.

5 15. The cleanser formulation of claim 1 wherein the sulfur is selected from the group consisting of elemental sulfur, a sulfite, a sulfide, a sulfate, a thiosulfate, and a mercaptan.

16. The cleanser formulation of claim 1 wherein the concentration of sulfur in the formulation is between about 1% and about 25%.

10 17. The cleanser formulation of claim 16 wherein the concentration of sulfur is between 2% and 20%.

18. The cleanser formulation of claim 17 wherein the concentration of sulfur is between 3% and 10%.

19. The cleanser formulation of claim 18 wherein the concentration of sulfur is about 5%.

15 20. The cleanser formulation of claim 1 which further comprises a sulfonamide.

21. The cleanser formulation of claim 20 wherein the sulfonamide is sulfacetamide.

22. The cleanser formulation of claim 21 wherein the concentration of sulfacetamide in the cleanser is between about 1% and about 35%.

5 23. The cleanser formulation of claim 22 wherein the concentration of sulfacetamide is between 5% and 20%.

24. The cleanser formulation of claim 23 wherein the concentration of sulfacetamide is between 7.5% and 15%.

10 25. The cleanser formulation of claim 24 wherein the concentration of sulfacetamide is about 10%.

26. The cleanser formulation of claim 25 wherein the concentration of sulfur in the formulation is about 5%.

27. The cleanser formulation of claim 1 which is free of perfumes and fragrances.

28. The cleanser formulation of claim 27 which is free of masking agents.

29. The cleanser formulation of claim 1 which comprises the following ingredients in the following concentrations w/w: 5% to 30% surfactant, 7% to 35% lipophilic emulsifier, 2% to 20% sulfur, and 5% to 20% sodium sulfacetamide.

30. The cleanser formulation of claim 29 which further comprises 1 to 25% thickening agent.

31. The cleanser of claim 1 which comprises the following ingredients: sulfur, methylparaben, propylparaben, sodium cocoyl isethionate, sodium lauryl sulfoacetate, disodium laureth sulfosuccinate, polypropylene glycol-2 hydroxyethyl coco isostearamide, emulsifying wax, and 0 to 1% mineral oil, wherein the concentration of emulsifying wax is at least 7%.

32. The cleanser formulation of claim 31 which comprises the following ingredients in the following concentrations w/w: 1 to 25% sulfur, 0.1 to 0.25% methylparaben, 0.01 to 0.04% propylparaben, 3 to 10% sodium cocoyl isethionate, 2.5 to 15% combination of sodium lauryl sulfoacetate and disodium laureth sulfosuccinate, 1 to 5% polypropylene glycol-2 hydroxyethyl coco isostearamide, 7 to 35% emulsifying wax, and 0% or more mineral oil.

33. The cleanser formulation of claim 1 which comprises the following ingredients: sodium sulfacetamide, sulfur, methylparaben, propylparaben, disodium EDTA, butylated hydroxytoluene, sodium thiosulfate, sodium cocoyl isethionate, sodium lauryl sulfoacetate,

disodium laureth sulfosuccinate, polypropylene glycol-2 hydroxyethyl coco isostearamide, diluted hydrochloric acid, emulsifying wax, and 0% or more mineral oil.

34. The cleanser formulation of claim 33 which comprises the following ingredients in the following concentrations w/w: 5 to 15% sodium sulfacetamide, 2 to 10% sulfur, 0.1 to 0.25% methylparaben, 0.01 to 0.04% propylparaben, 0.01 to 0.25% disodium EDTA, 0.01 to 0.2% butylated hydroxytoluene, 0.05 to 0.5% sodium thiosulfate, 3 to 10% sodium cocoyl isethionate, 2.5 to 15% combination of sodium lauryl sulfoacetate and disodium laureth sulfosuccinate, 1 to 5% polypropylene glycol-2 hydroxyethyl coco isostearamide, 0.25 to 1.5% diluted hydrochloric acid, 7 to 35% emulsifying wax, and 0% or more mineral oil.

35. A method for making a cleanser formulation comprising combining sulfur, a surfactant, and a lipophilic emulsifying agent to obtain the formulation, wherein the concentration of the lipophilic emulsifying agent in the formulation is at least about 7% w/w.

36. The method of claim 35 wherein the sulfur is dispersed and homogenized with a surfactant and water to form a slurry and the slurry is combined with other ingredients including the lipophilic emulsifying agent to obtain the formulation.

37. The method of claim 35 wherein the lipophilic emulsifying agent is emulsifying wax.

38. The method of claim 37 wherein the emulsifying wax is Emulsifying Wax N.F.

39. The method of claim 35 wherein the concentration of emulsifying agent is between 10% and 15%.

40. The method of claim 35 wherein the concentration of emulsifying agent is about 15%.

41. The method of claim 35 wherein the concentration of emulsifying agent is over 15%.

42. The method of claim 35 wherein the surfactant is selected from the group consisting of nonionic, anionic, cationic, zwitterionic, amphoteric, and ampholytic surfactants.

43. The method of claim 35 wherein the surfactant is an ionic surfactant or a combination of ionic and non-ionic surfactants.

44. The method of claim 43 wherein the surfactant is one or more surfactants selected from the group consisting of sodium cocoyl isethionate, polypropylene glycol (PPG) -2-hydroxyethylcoco isostearamide, and a combination of disodium laureth sulfosuccinate and sodium lauryl sulfoacetate.

45. The method of claim 35 wherein the concentration of surfactant in the formulation is about 5 to about 50%.

46. The method of claim 45 wherein the concentration of surfactant in the formulation is 10 to 35%.

5 47. The method of claim 46 wherein the concentration of surfactant in the formulation is 15 to 25%.

48. The method of claim 35 wherein the sulfur is selected from the group consisting of elemental sulfur, a sulfite, a sulfide, a sulfate, a thiosulfate, and a mercaptan.

10 49. The method of claim 35 wherein the concentration of sulfur in the formulation is between 1% and 25%.

50. The method of claim 49 wherein the concentration of sulfur is between 2% and 20%.

51. The method of claim 50 wherein the concentration of sulfur is between 3% and 10%.

15 52. The method of claim 51 wherein the concentration of sulfur is about 5%.



53. The method of claim 35 which further comprises combining a sulfonamide with the sulfur, the surfactant, and the lipophilic emulsifying agent.

54. The method of claim 53 wherein the sulfonamide is sulfacetamide.

55. The method of claim 54 wherein the concentration of sulfacetamide in the  
5 formation is between 1% and 35%.

56. The method of claim 55 wherein the concentration of sulfacetamide is between 5% and 20%.

57. The method of claim 56 wherein the concentration of sulfacetamide is between 7.5% and 15%.

10 58. The method of claim 57 wherein the concentration of sulfacetamide is about 10%.

59. The method of claim 58 wherein the concentration of sulfur in the formulation is about 5%.

60. The method of claim 35 wherein no perfumes or fragrances are combined in the formulation.

61. The method of claim 60 wherein no masking agents are combined in the formulation.

62. The method of claim 35 wherein the following ingredients in the following concentrations w/w are combined to obtain the formulation: about 5% to about 30% surfactant,  
5 about 1% to about 25% thickening agent, about 7% to about 35% lipophilic emulsifier, about 2% to about 20% sulfur, and about 5% to about 20% sodium sulfacetamide.

63. The method of claim 35 wherein the following ingredients are combined to obtain the formulation: sulfur, methylparaben, propylparaben, sodium cocoyl isethionate, sodium lauryl sulfoacetate, disodium laureth sulfosuccinate, polypropylene glycol-2 hydroxyethyl coco  
10 isostearamide, and emulsifying wax, wherein the concentration of emulsifying wax in the formulation is between 7% and 35%.

64. The method of claim 63 wherein the following ingredients in the following concentrations w/w are combined to obtain the formulation: 1 to 25% sulfur, 0.1 to 0.25% methylparaben, 0.01 to 0.04% propylparaben, 3 to 10% sodium cocoyl isethionate, 2.5 to 15%  
15 combination of sodium lauryl sulfoacetate and disodium laureth sulfosuccinate, 1 to 5% polypropylene glycol-2 hydroxyethyl coco isostearamide, 7 to 35% emulsifying wax, and 0% or more mineral oil.

65. The method of claim 35 wherein the following ingredients are combined to obtain the formulation: sodium sulfacetamide, sulfur, methylparaben, propylparaben, disodium EDTA, butylated hydroxytoluene, sodium thiosulfate, sodium cocoyl isethionate, sodium lauryl sulfoacetate, disodium laureth sulfosuccinate, polypropylene glycol-2 hydroxyethyl coco isostearamide, diluted hydrochloric acid, and emulsifying wax, wherein the concentration of emulsifying wax in the formulation is between 7 and 35%.

66. The method of claim 65 wherein the following ingredients in the following concentrations w/w are combined to obtain the formulation: 5 to 15% sodium sulfacetamide, 2 to 10% sulfur, 0.1 to 0.25% methylparaben, 0.01 to 0.04% propylparaben, 0.01 to 0.25% disodium EDTA, 0.01 to 0.2% butylated hydroxytoluene, 0.05 to 0.5% sodium thiosulfate, 3 to 10% sodium cocoyl isethionate, 2.5 to 15% combination of sodium lauryl sulfoacetate and disodium laureth sulfosuccinate, 1 to 5% polypropylene glycol-2 hydroxyethyl coco isostearamide, 0.25 to 1.5% diluted hydrochloric acid, 7 to 35% emulsifying wax, and 0% or more mineral oil.

67 A cleanser formulation made by the method of claim 35.

68. A cleanser formulation made by the method of claim 62.

69. A cleanser formulation made by the method of claim 63.

70. A cleanser formulation made by the method of claim 64.

71. A cleanser formulation made by the method of claim 65.

72. A cleanser formulation made by the method of claim 66.